CLAIMS

1. A polarizer array which has a multilayer structure in which at least two transparent materials are alternately laminated in a z direction on one substrate parallel to an x-y plane in an orthogonal coordinate system x, y, andz, wherein the multilayer structure is divided into at least three regions in the x-y plane, each layer has one-dimensional periodic concave and convex shapes repeated in one direction defined in each region on the x-y plane, and, with respect to light being incident on the x-y plane in a perpendicular or oblique direction, only a polarized light parallel or perpendicular to the concave and convex shape in each region is transmitted.

2. The polarizer array according to claim 1, wherein repeating directions of the one-dimensional periodic concave and convex shapes are different from each other by 45° or less in the at least three regions.

3. The polarizer array according to claim 1 or 2, wherein the multilayer structure has at least one region in which the repeating direction of the one-dimensional periodic concave and convex shapes is set at 0° to an x axis, at least one region in which the repeating direction of the one-dimensional periodic concave and convex shapes is set at 45° to the x axis, and at least one region in which the repeating direction of the one-dimensional periodic concave and convex shapes is set at 90° to the x axis.

4. A polarization analyzer comprising: the polarizer array according to any one of claims 1 to 3 and a light-receiving array which can independently receive light transmitted through the regions.

5. The polarization analyzer according to claim 4, wherein a quarter waveplate is arranged in at least one region of the polarizer array according to any one of claims 1 to 3 such that the quarter waveplate serves as a common optical path on a light incident side.

6. A waveplate which has a multilayer structure in which at least two

transparent materials are alternately laminated in a z direction on one substrate parallel to an x-y plane in an orthogonal coordinate system x, y, and z, wherein the multilayer structure is divided into at least two regions in the x-y plane, each layer has one-dimensional periodic concave and convex shapes parallel to the x-axis direction in at least one of the regions, each layer is flat in at least one of the other regions, and a phase difference between orthogonal polarized light is given to light which is incident in a direction unparallel to the substrate and which is transmitted through the region having the one-dimensional periodic concave and convex shapes.

7. The polarization analyzer according to claim 4, wherein the waveplate according to claim 6 and operating as a quarter waveplate is arranged in at least one region of the polarizer array according to any one of claims 1 to 3 such that the waveplate serves as a common optical path on a light incident side.

8. The polarization analyzer according to claim 4, 5, or 7, wherein the light-receiving device array is any one of a photodetector, a CCD, and an image pickup tube.

9. A polarization stabilizer comprising: the polarization analyzer according to claim 4, 5, or 7; a means for splitting a light beam; and a means for controlling polarization.

10. A polarization mode dispersion compensator comprising: the polarization analyzer according to claim 4, 5, 7, or 8; and a means for being able to give a variable phase difference between orthogonal polarization modes.